Intranasal administration of PEGylated transforming growth factor-alpha improves behavioral deficits in a chronic stroke model.

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Public Summary:

Scientific Abstract:
We previously demonstrated that infusion of transforming growth factor (TGF)-alpha after chronic middle cerebral artery occlusion (MCAO) stimulates stem and progenitor cell proliferation, migration, and neuronal differentiation associated with the amelioration of neurologic impairment. But the use of TGF-alpha in humans is impeded by impracticality of intracranial infusion and the inability of intravenous TGF-alpha to cross the blood-brain barrier. Here we investigated whether intranasal delivery of PEGylated TGF-alpha (PEG-TGF-alpha) is a viable alternative. We found that intranasal PEG-TGF-alpha can also induce the proliferation of neural progenitors and their migration to the damaged striatum, and that this is associated with significant behavioral improvement in the MCAO model. This nonsurgical approach represents a potential therapeutic strategy for human patients.